John Hoffman
DIR Chief Technology Officer

news and trends

statescoop

STATE CLOUD READINESS REPORT

State agency IT leaders see cloud computing as a pivotal pathway to improving mission services. But impediments, including acquisition capabilities, remain.

NASCIO Representing Chief Information Officers of the States

STATE CIO TOP 10 PRIORITIES

2019 Strategies, Management & Process Solutions

NASCIO Representing Chief Information Officers of the States WWW.NASCIO.ORG

1. **Security and Risk Management**
governance; budget and resource requirements; security frameworks; data protection; training and awareness; insider threats; third party security practices as outsourcing increases

2. **Cloud Services**
cloud strategy; proper selection of service and deployment models; scalable and elastic IT-enabled capabilities provided "as a service" using internet technologies

Gartner Top Technology Trends for Federal CIO's

- **Cloud**
- **Automation for operational improvements**
- **Advanced analytics/business intelligence**
- **Cybersecurity**
- **Artificial intelligence/machine learning**
- **Digital product management**
- **Digital government technology platform**

CIA's Cloud is 'Pretty Close' to Invincible, CIO Says

Nextgov

Aug 23, 2018

OMB, GSA Get Ready to Upgrade Cloud First Into New Cloud Smart Strategy

OCT 23 2014 CLOUD

14 Tenets of California's Cloud–First Policy

The new policy requires state agencies to evaluate cloud computing as an alternative investment for all IT projects.

by Nicole Blake Johnson

Nicole is a social media journalist for the CDW family of technology magazines.

CIA's CIO John Edwards stated:

"It's the best decision we've ever made."

"It's the most innovative thing we've ever done," Edwards said in a June 14 speech at AWS' Public Sector Summit. ***"It is having a material impact on both the CIA and the IC."***

Gartner

The worldwide public cloud services market will reach over $221 billion in 2019, growing 16.0% over 2018 in U.S. dollars (17.8% in constant currency). With software-as-a-service comprising over 40% of revenue, the total market will reach just under $400 billion in 2023.

Forecast: Public Cloud Services, Worldwide, 2017-2023, 2Q19 Update

DIR

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Recent cloud legislation for agencies

SB 819

A state agency shall consider:

(1) cloud computing service options, including any security benefits and cost savings associated with purchasing those service options from a cloud computing service provider and from a statewide technology center established by the department, when making purchases for a major information resources project under Section 2054.118; and

(2) cloud computing service options and compatibility with cloud computing services in the development of new information technology software applications.

Recent cloud legislation for agencies

HB 3875

A state agency shall ensure when making purchases for an automated information system or a major information resources project, that the system or project is capable of being deployed and run on cloud computing services.

When making a purchase for an automated information system or a major information resources project, a state agency may determine that, due to integration limitations with legacy systems, security risks, or costs, the agency is unable to purchase a system or project capable of being deployed and run on cloud computing services.

So… what does “cloud” mean???

National Institute of Standards and Technology
U.S. Department of Commerce

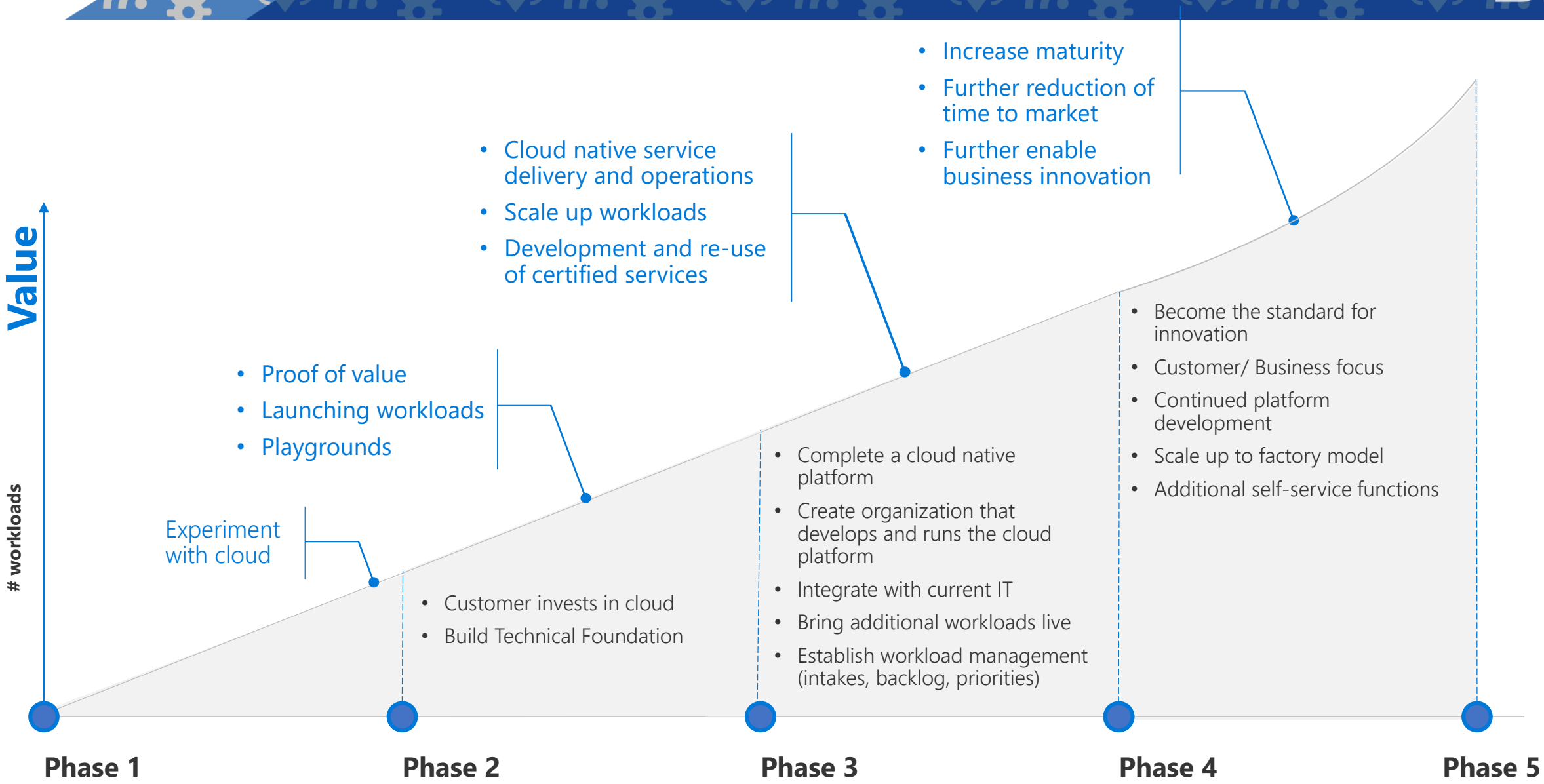
The official NIST definition, "cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.“

The NIST definition lists five essential characteristics of cloud computing:

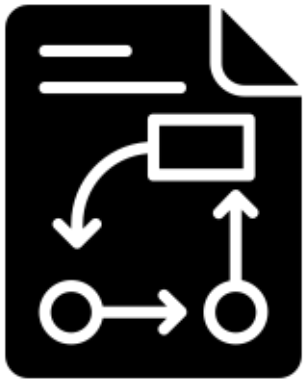
1. **on-demand self-service**
2. **broad network access**
3. **resource pooling**
4. **rapid elasticity or expansion**
5. **measured service**

It also lists three "service models" (software, platform and infrastructure), and four "deployment models" (private, community, public and hybrid) that together categorize ways to deliver cloud services.

Cloud Maturity is a Journey



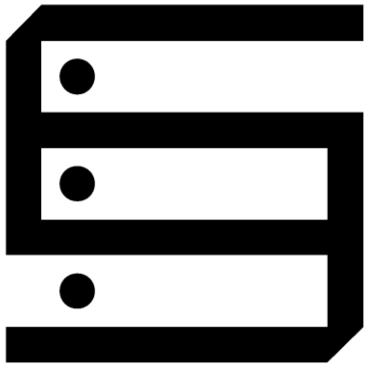
Key Cloud Considerations



STRATEGIC DECISION

VALUE CASE

SECURITY POLICY



APPLICATION READINESS

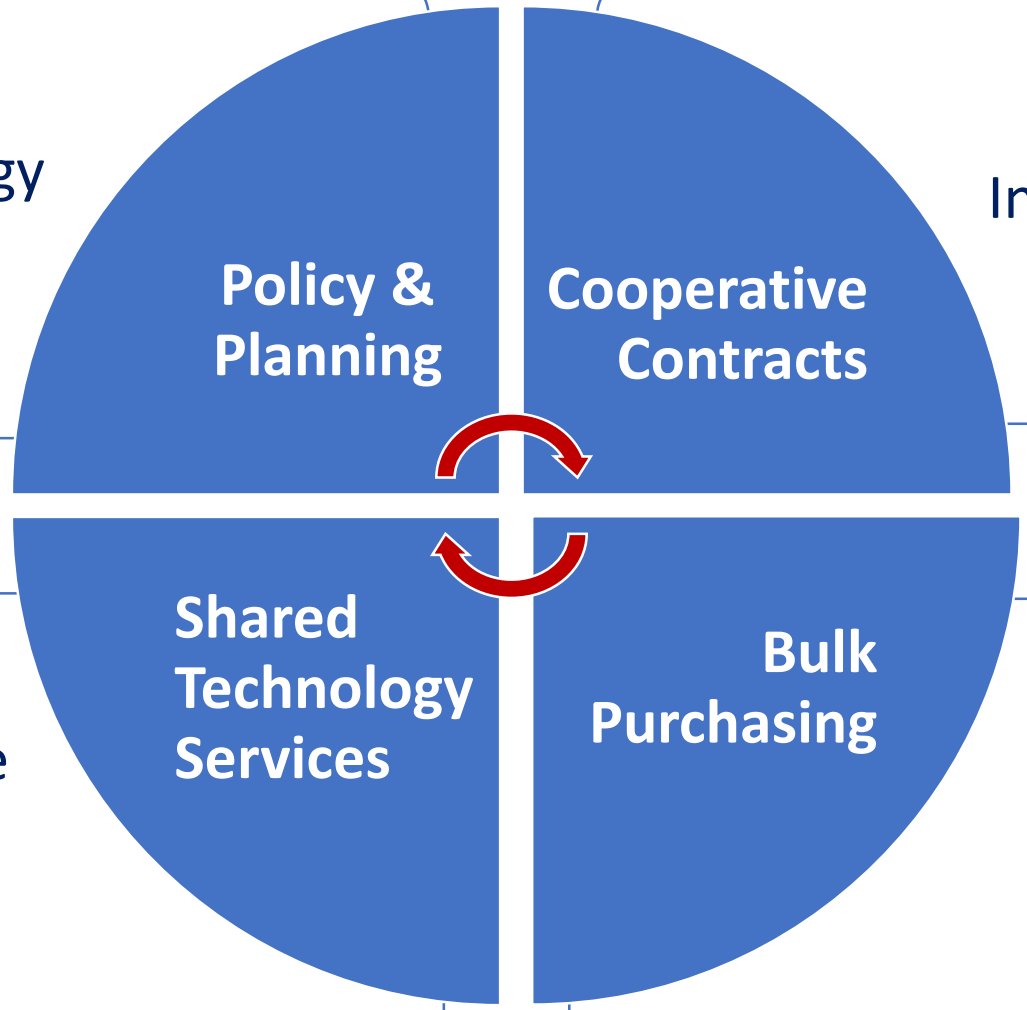
OPERATING MODEL

Cloud Models
&
DIR Cloud Offerings

Navigating DIR & Cloud Offerings

Policy & Planning

- Monitor & Report on State of Technology
- IT Strategic Planning
- Provide IT Standards and Guidance



"Do it Yourself"

Information Technology Goods and Services

"Outsource"

DIR-managed full suite of outsourced IT service offerings

Bulk Purchasing

Leverage "Known" volume to achieve further savings

DIR Cloud Offerings

Cooperative Contract Cloud

Cloud Service Contracts provides DIR Customers with access to cloud service models and deployment models that meet the essential characteristics of cloud computing.

- **Public Cloud Providers**
- **SaaS Solutions**

Shared Technology Services (STS)

The Data Center Services (DCS) provides DIR Customers with access to cloud services with the security of knowing all the characteristics are being addresses.

- **DCS On Premise Private Cloud**
- **DCS Public Cloud**
- **DCS Hybrid Cloud**

Cloud Deployment Models

Private Cloud

Single organization comprising multiple consumers (e.g., business units).

Community Cloud

Specific community of consumers from organizations that have shared concerns (e.g., mission, security requirements, policy, and compliance considerations).

Hybrid Cloud

A composition of 2 or more distinct cloud infrastructures (private, community, or public) that remain unique entities, but are bound together by standardized or proprietary technology that enables data and application portability

Public Cloud

Open use by the general public. It may be owned, managed, and operated by a business, academic, or government organization, or some combination of them. It exists on the premises of the cloud provider.

Cloud Service Models

Infrastructure as a Service (IaaS)

- Processing, storage, networks, and other fundamental computing resources where the consumer can deploy and run arbitrary software, which can include operating systems and applications
- The consumer can deploy and run arbitrary software, which can include operating systems and applications

Cloud Service Models

Platform as a Service (PaaS)

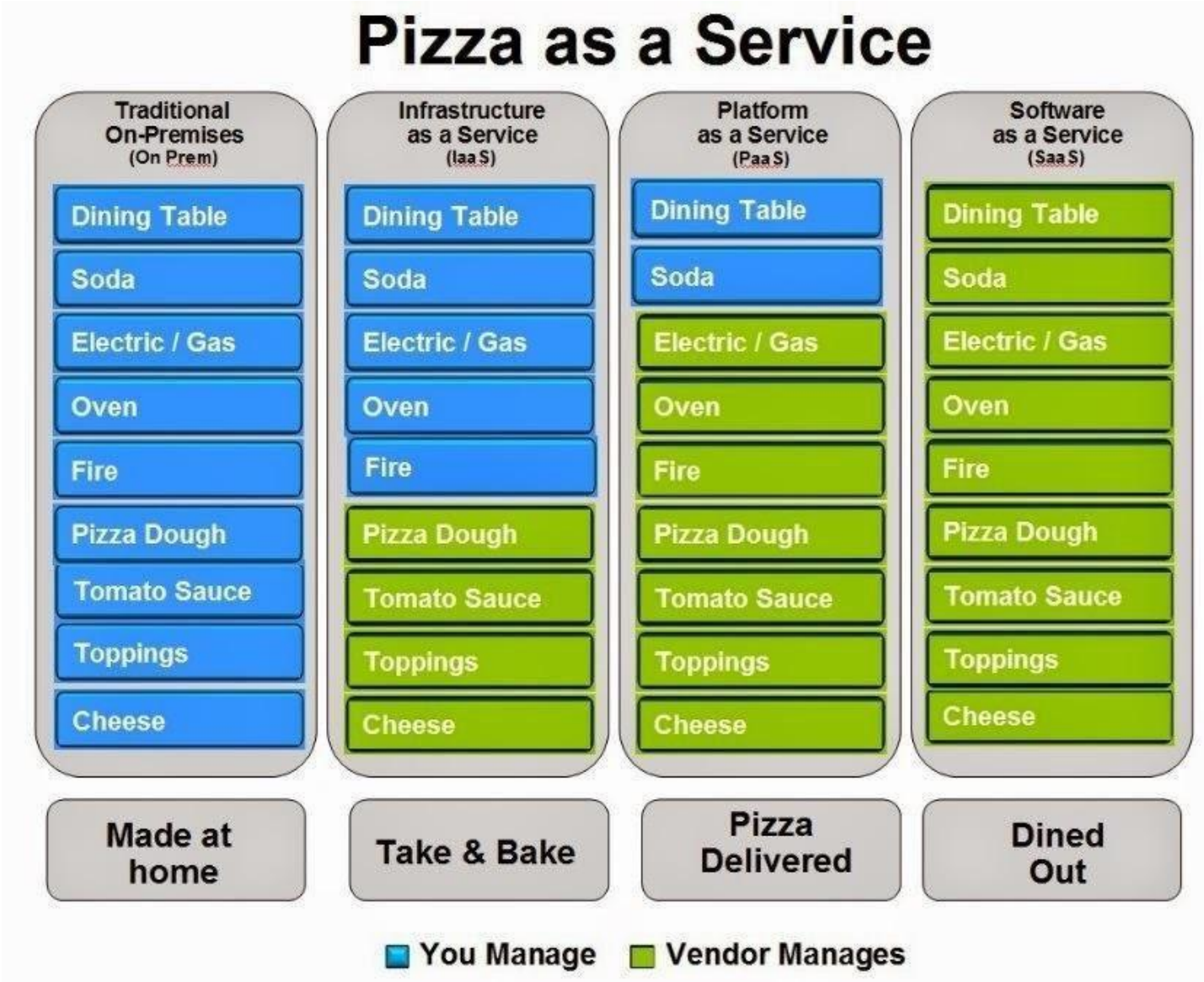
- Deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages and tools supported by the provider
- Consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly application hosting environment

Cloud Service Models

Software as a Service (SaaS)

- Leverage applications as-is which are completely supported by the provider.
- Flexibility to configurations not code.
- Consumer does not manage or control the underlying cloud infrastructure, operating systems or application environment.

Cloud service models are like... Pizza?



Cloud Broker

- A cloud broker is an entity that manages the use, performance and delivery of cloud services, and negotiates relationships between cloud providers and cloud consumers.
- A cloud broker acts as the intermediary between consumer and provider and will help consumers through the complexity of cloud service offerings and may also create value-added cloud services

Miscellaneous as a Service

- This category is used to describe cloud service offerings that does not meet the definition for Broker, IaaS, PaaS or SaaS as defined above.

Cooperative Cloud Contracts

- 32 Active Contracts
- Awarded by Cloud Service Models - (IaaS, PaaS, Cloud Broker, MaaS)
- Include “related technical services”
- When buying, review and use the Sample Statement of Work Appendix D of the Contracts

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Data Center

Mainframe
Midrange Client/Server
Storage
Managed Hosting
Co-location

End-User Computing

Desktop
Laptop
Service Desk
Mobility
Voice Premises

Applications

Development
Enhancement
Maintenance
Support

Security

Enablement
Protection
Governance

Networking

Routers
Hubs
Switches
Communication

Cloud-Based Solutions

IaaS
PaaS
STaaS
SaaS
Simple Hosting
Private Cloud

More Negotiable → Less Negotiable

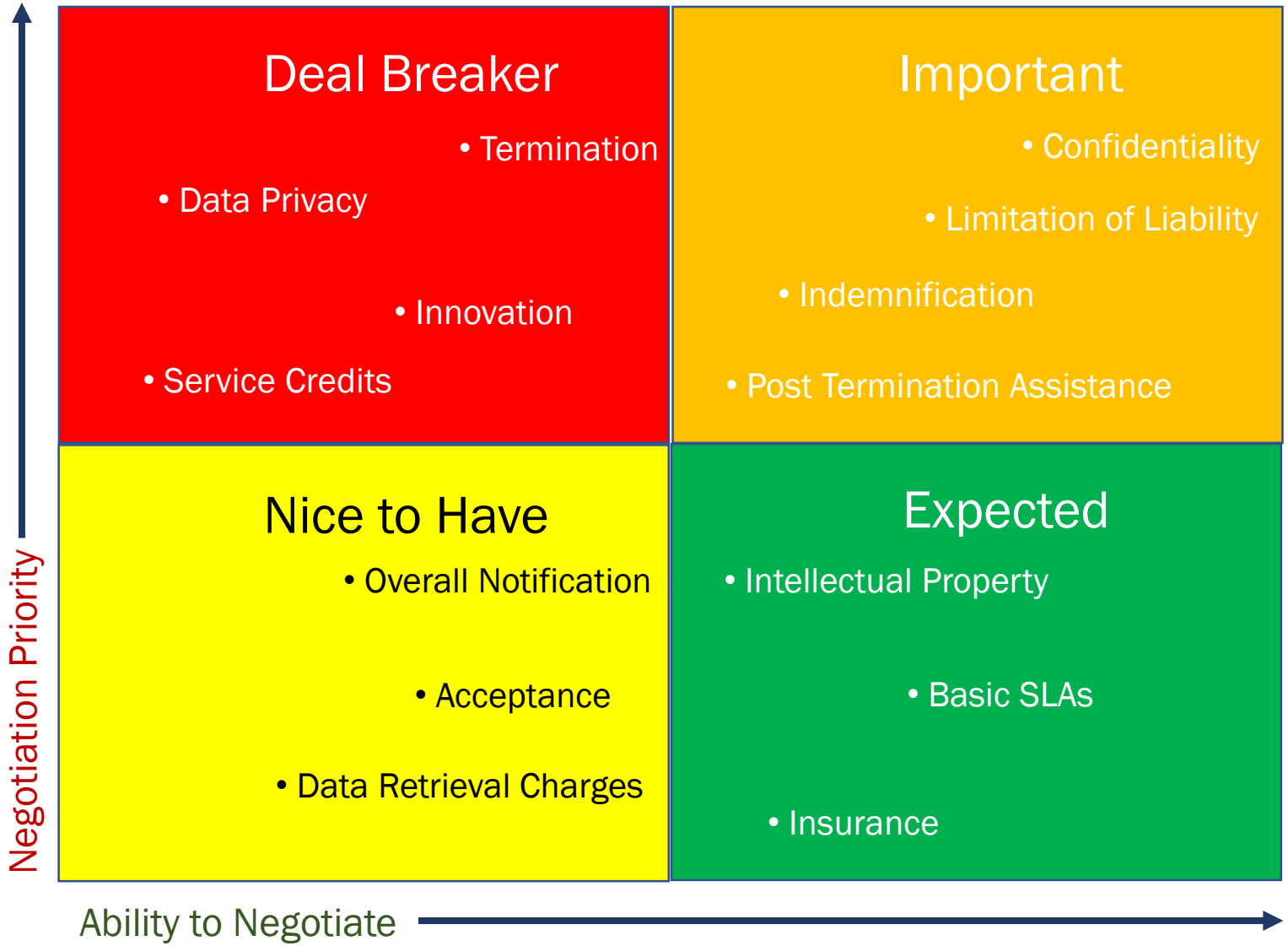
Understand Ability to Negotiate

Deal Breaker – High risk; harder to negotiate

Important – Medium risk; more negotiable than Deal Breaker

Expected – Medium risk; more common asks

Nice to Have – Lower risk; harder to negotiate



Cooperative Contract Advantages

Pre-competed and pre-negotiated

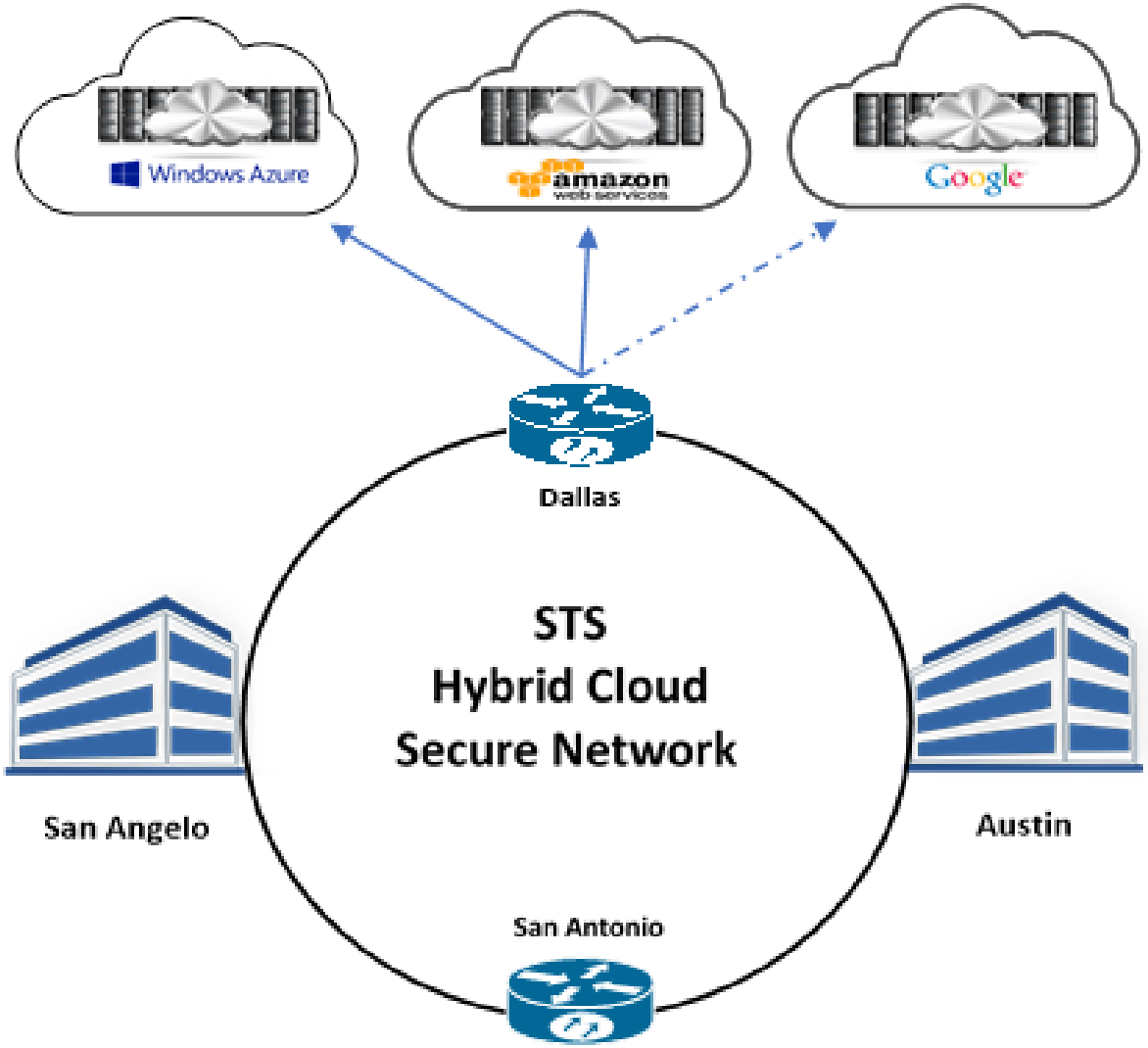
Streamlines Purchasing Process For Customers

- Pre-Negotiated Contracts
  - Reduce purchasing and contract cycle time; customers issue P.O. directly to DIR vendor
  - Reduce duplicate efforts
- Simplifies sales process for vendors
- Competition is built into the program
- Create savings for taxpayers by leveraging the state's buying power to lower prices
- Allow flexibility for DIR customers to negotiate pricing and other terms and conditions specific to customer requirements

Is your agency a DCS member?

This determines the path you will take when looking at cloud offerings.

DIR Shared Technology Services Cloud

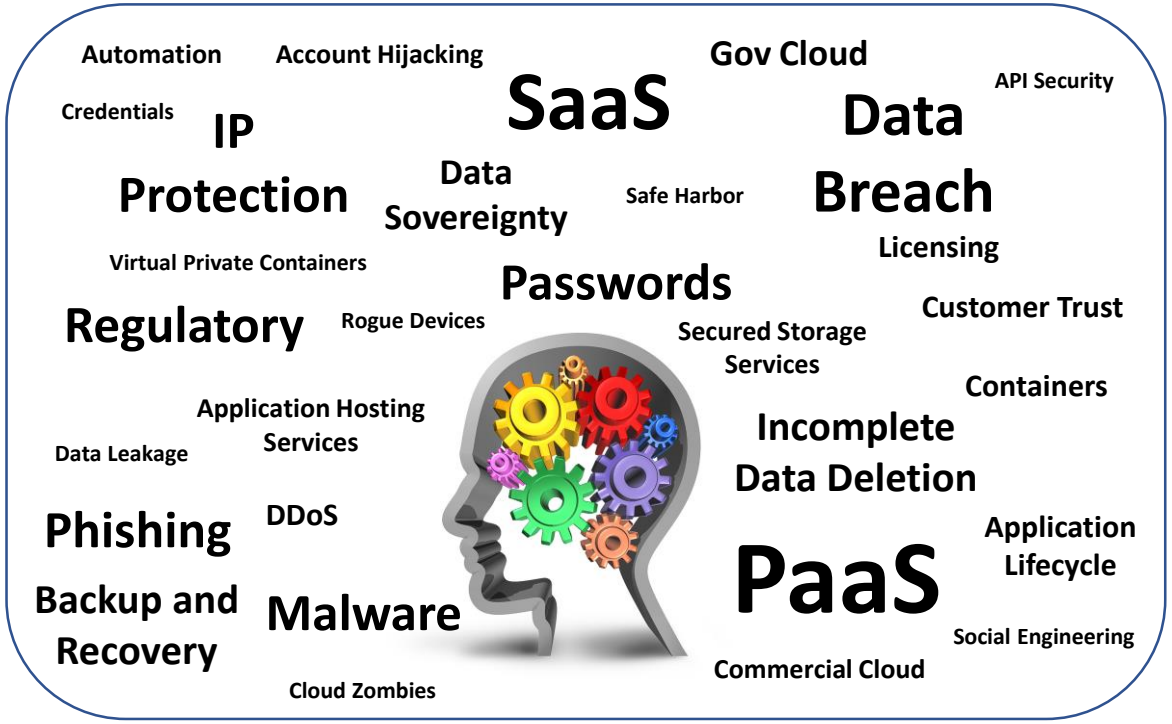


Shared Technology Services (STS)

Data Center Services (DCS)
Texas Public Cloud Security

Public Cloud Security Risks

- **Public Cloud Security Risks are REAL…**
  - but no more so than in the traditional data center
- **However…**
  - Access to data is different
  - Service responsibilities are not single sourced
  - Threat landscape can be more sophisticated
- **The single greatest threat is human error**



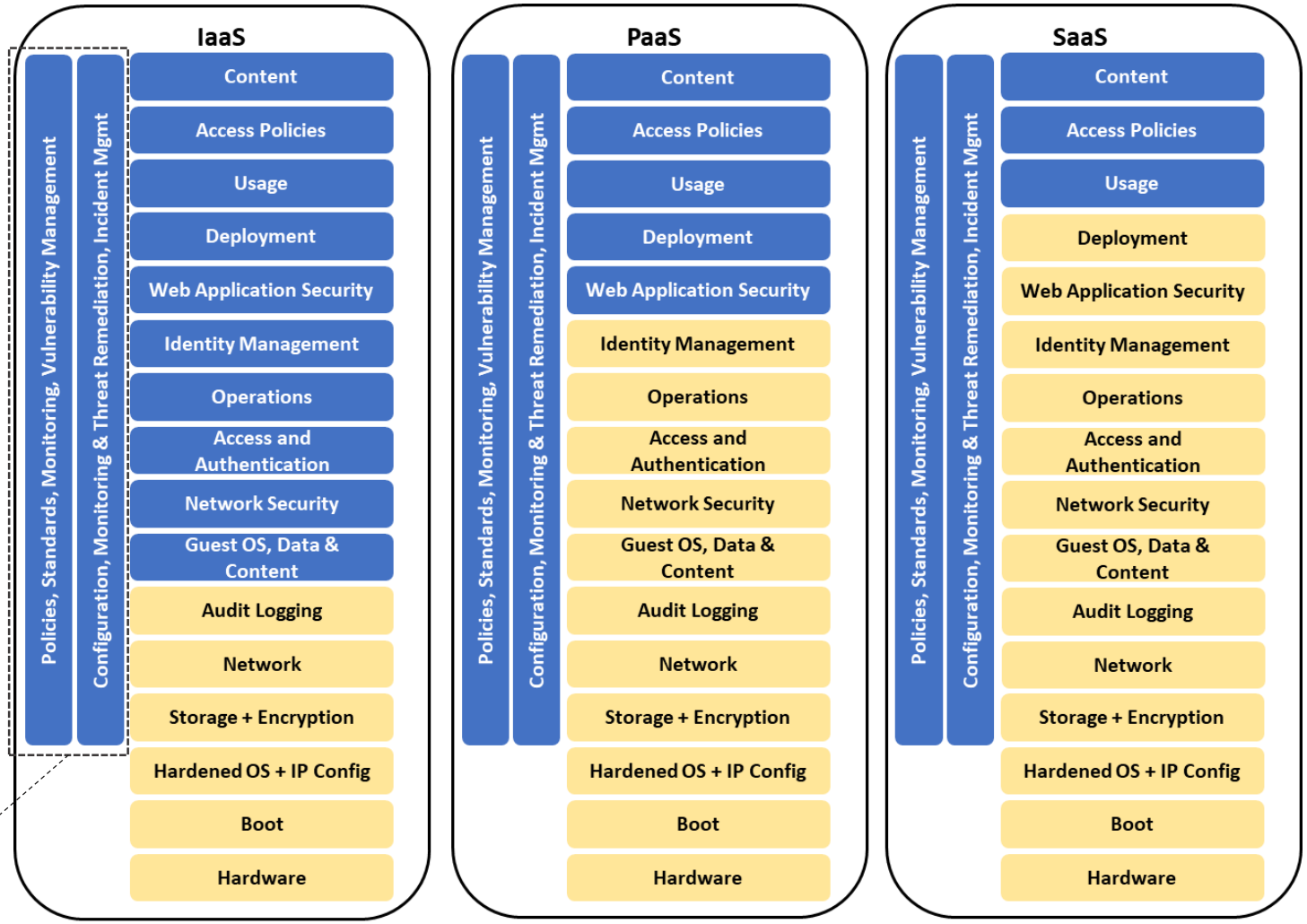
Public Cloud Security Management For Those Consuming Public Cloud Services Directly

Security OF the Cloud:

- Public Cloud providers are responsible for securing infrastructure and services

Security IN the Cloud:

- Consumers of the Services are responsible for security of their data in the Cloud
- Public Cloud Customers would provide the following:
  1. Defined security policies, standards & baseline configurations
  2. Solution blueprints with embedded security configurations
  3. Detection and response to negligent or malicious threats including malware protection and penetration identification
  4. Visibility of user activity, privileged user threats & compromise accounts
  5. Security Incident remediation
  6. Cybersecurity Assessments



Responsibility model for Public Cloud service components

DCS Customer | Public Cloud Provider (PCP)

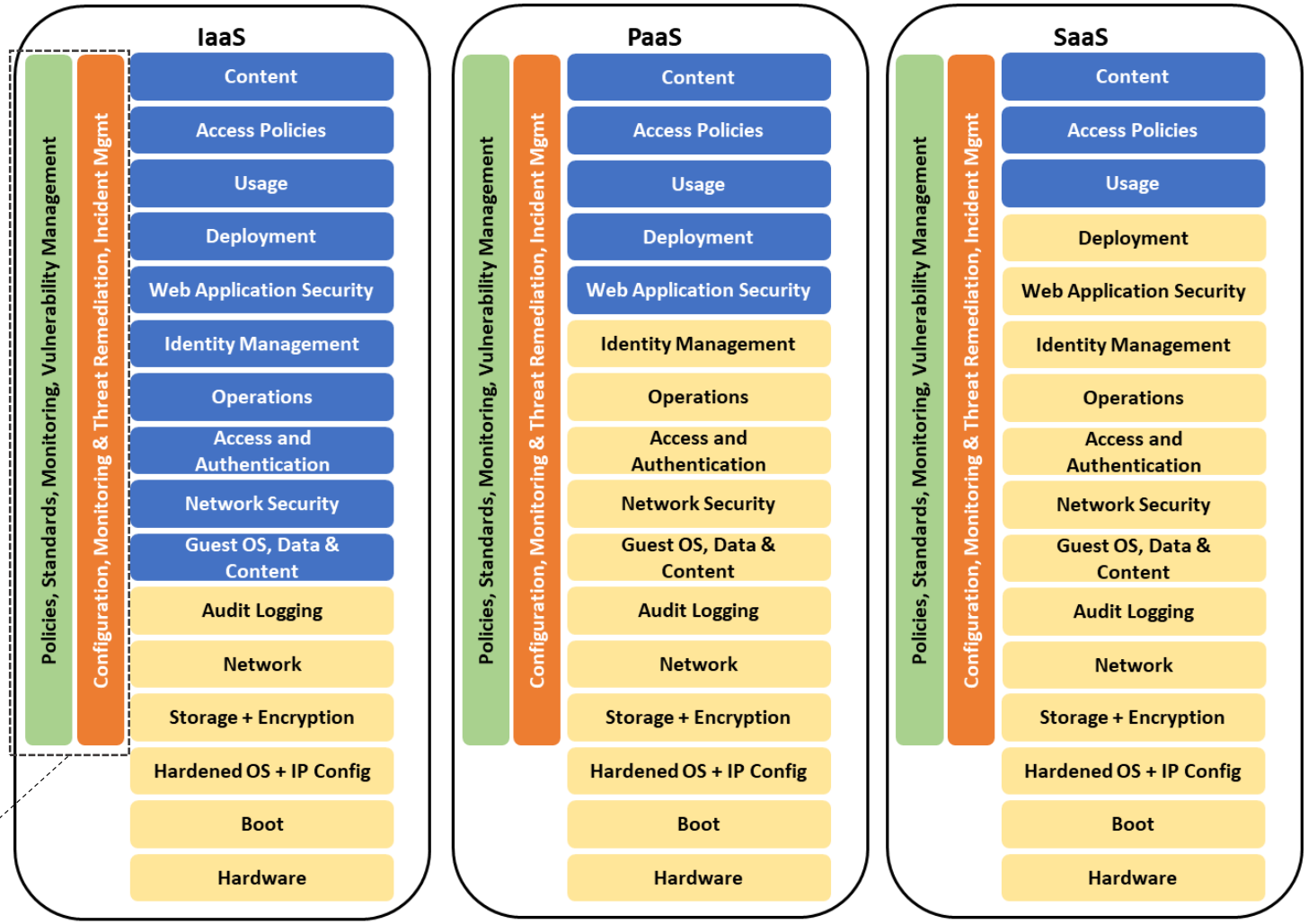
Texas Public Cloud Security Value

Security OF the Cloud:

- Public Cloud providers are responsible for securing infrastructure and services

Security IN the Cloud:

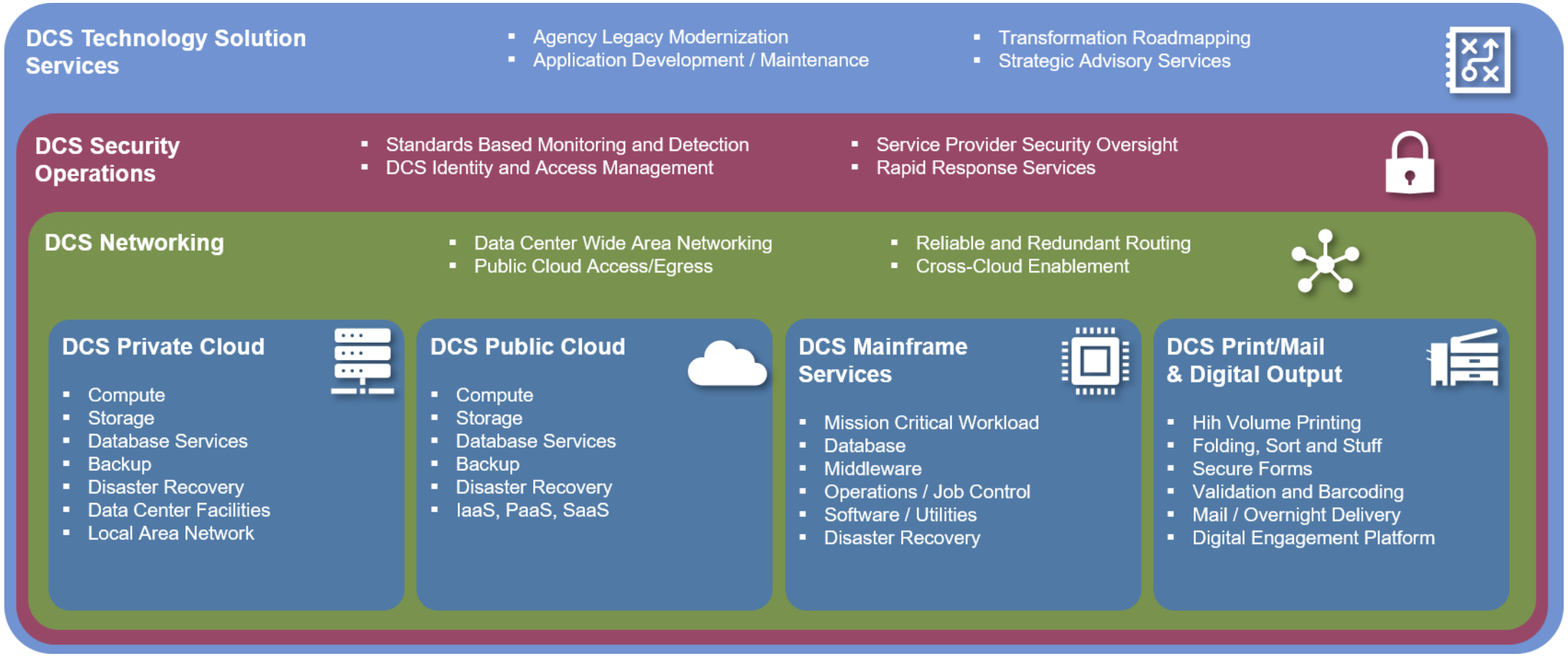
- Consumers of the Services are responsible for security of their data in the Cloud
- Texas Public Cloud mitigates security risk by providing:
  1. Defined security policies, standards & baseline configurations
  2. Solution blueprints with embedded security configurations, ongoing configuration inspection
  3. Detection and response to negligent or malicious threats including malware protection and penetration identification
  4. Visibility of user activity, privileged user threats & compromise accounts
  5. Security Incident remediation
  6. Cybersecurity Assessments



Responsibility model for Public Cloud service components

Security SCP | Public Cloud Manager (PCM) SCP | DCS Customer | Public Cloud Provider (PCP)

Next Gen DCS Model – FY21



Texas Public Cloud Security Summary

- **The Next Generation Operating Model introduces new roles to address Public Cloud Security**
  - Technology Solution Services (TSS) ➔ Secure Solution Designs
  - Public Cloud Manager (PCM) ➔ Secure Solution Deployment, Configuration Audits, Detect and Mitigate Threats
  - Security Operations SCP ➔ Analyze, Detect, Mitigate Threats, Enhanced Security Incident Remediation, Security Operational Governance

- **Texas Public Cloud provides Customers the ability to leverage the flexibility and financial benefits of the Public Cloud with security assurances**

DIR Strategic Cloud Initiatives

Cloud Center of Excellence and Cloud Tiger Team

- 750+ seats in Cloud focused training sessions since March
- 50+ Cloud Tiger Team members
  - Atos, Capgemini, DIR, Amazon, Azure and agencies
- 20+ Cloud Tiger Team cases generated
- 7 Limited Support Cloud Environments
- 4 cloud workshops and “deep dive” sessions completed
- 3 proof of concepts completed on artificial intelligence, robotic process automation and chatbots